REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

Previously, all of the claims, 1-20, of this application were allowed on February 8, 2005. After the Issue Fee was received by the PTO, this application was withdrawn from issue on June 16, 2005 by Mr. Robert Oberleitner, a Director of Technology Center 3600. Subsequently, claims 6-12 were rejected in an Office Action dated June 22, 2005. Claim 6 is an independent claim, and claims 7-12 are dependent on claim 6. Claim 6 was the only independent claim that was rejected. The remaining claims, 1-5 and 13-20 remain allowable.

Claim 6 has been rejected as being unpatentable over Hamilton (U.S. patent number 4,702,340) in view of Yoshinori et al. (U.S. patent number 4,834,221). Applicant respectfully traverses this rejection. The Office Action makes the following allegation with regard to the Hamilton reference: that Hamilton teaches "a mechanical linkage connecting a brake pedal with a caliper."

Applicant respectfully disagrees with this allegation. The Hamilton reference is directed to a transmission and drive system for a motorcycle, as opposed to a braking system. Nearly all of Hamilton's disclosure is directed to the transmission and power delivery systems with just a passing mention of a braking system in the following two short sentences:

> As indicated in FIG. 2, the left end 94 of the output shaft 54 is provided with a disk brake 96. This is the disk brake associated with the rear wheel. FIG. 2 schematically illustrates a caliper 97 for operating the disk brake.
> *See* Hamilton, column 4, lines 64-68.

From this cursory disclosure, the Office Action asserts that Hamilton expressly teaches the required "mechanical linkage connecting the brake pedal with the caliper." The Applicant respectfully disagrees with this position.

Not only does Hamilton fail to teach or render obvious a "mechanical linkage" of any kind, Hamilton also fails to disclose any kind of connection between a brake pedal and a caliper. In fact, Hamilton fails to teach even a brake pedal. Only the disk and caliper are shown schematically in Figure 2. The hypothetical brake pedal of Hamilton is not mentioned nor is it shown in any of the Figures.

The Yoshinori reference is apparently relied upon to teach the concept of placing a brake pedal on one lateral side of the motorcycle and placing the caliper on the opposite lateral side of the motorcycle. Applicant respectfully traverses the combination of Yoshinori with Hamilton. Obviousness cannot be legally established unless there is some suggestion or incentive in the prior art that would motivate an artisan of ordinary skill. *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941 (Fed. Cir. 1992). Additionally, the prior art must suggest the desirability of the combination. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In formulating the rejection, the PTO cannot rely on cursory statements, but must provide an inquiry that is thorough and searching, and based on objective evidence of record. *In re Lee*, 277 F.3d 1338, 61 USPQ.2d 1430 (Fed. Cir. 2002). This reasoning must also be clearly documented on the record. *In re Thrift*, 298 F.3d 1357, 63 USPQ.2d 2002 (Fed. Cir. 2002).

The motivation offered in the Office Action, "to provide a space for the brake lines and the master cylinder to provide a fluid force to the caliper," fails to provide a legally sufficient motivation to combine the teaching of Yoshinori with Hamilton. Yoshinori teaches an anti-lock braking system that includes hydraulically actuated brakes. The rear brake caliper 3*r* of Yoshinori appears to be disposed on the rear portion of the rear brake disk. The disk appears to be a conventional disk that rotates coaxially with rear wheel 2*r*.

In order to apply the teaching of Yoshinori to the Hamilton device, the Yoshinori rear braking system must be extensively modified. The caliper, or at least the hydraulic line and master cylinder, must be moved from the rear portion of the rear disk brake to the disk location of Hamilton. This would greatly shorten the distance or length of the hydraulic line of Yoshinori from brake pedal 6 of Yoshinori to the disk 96 location of Hamilton, which is just above the mid-mounted transmission. In other words, in order to adapt or apply the brake system teaching of Yoshinori to the Hamilton reference, the hydraulic lines of Yoshinori must be greatly shortened.

Taken as a whole, the combined teachings of Yoshinori and Hamilton would not provide "space for the brake lines." The motivation offered in the Office Action would not exist when the teachings of Yoshinori and Hamilton are considered as a whole. Applicant also notes that the motivation statement and reasoning for the combination are not properly documented. The Office Action is unclear in establishing a basis for where the motivation to combine was found and what source provided of the motivation statement.

It is also important to note that significant modifications would be required of the Yoshinori reference in order to reconstruct the invention recited in claim 6. A combination is generally not considered obvious if modifications to the modifying reference are necessary in order to reconstruct the claimed invention.

Turning to the technical merits of the outstanding rejection, it may be argued that Yoshinori teaches a brake pedal, but the Yoshinori reference does not cure the defects of Hamilton noted above. Significantly, the Yoshinori reference does not teach or suggest the use of a ***mechanical linkage*** that connects a brake pedal with a caliper. Instead, Yoshinori teaches the use of a hydraulic line in combination with a rear master cylinder. *See* Yoshinori, column 2, line 64 to column 3, line 7.

The term, "linkage" is a term of art and is generally defined as follows: "A *linkage* consists of links (or bars), ***generally considered rigid***, which are connected by joints,

such as pins (or revolutes) or prismatic joints, to form open or closed chains (or loops)." (interior citations omitted) (emphasis added) *See* Sandor and Erdman, (1984) Advanced Mechanism Design: Analysis and Synthesis, Volume 2, page 1. Copies of the title page, the copyright page and page 1 are attached.

A "mechanical linkage" requires a series of generally rigid links. A hydraulic connection is not a "generally rigid link" as required by claim 6. To further clarify the nature of the mechanical linkage, claim 6 has been amended to now require that the "mechanical linkage" be comprised of a plurality of rigid links.

Because independent claim 6 is allowable, and because dependent claims 7-12 include all of the limitations of allowable independent claim 6, all of the dependent claims are allowable for the same reasons as their respective independent claim.

In view of the foregoing, all of the pending claims in this application are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for allowance, the Examiner is encouraged to contact applicant's representative at the number listed below.

Respectfully submitted,

PLUMSEA LAW GROUP, LLC

Dated: September 15, 2005 By: 

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VOLUME

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ADVANCED MECHANISM DESIGN: Analysis and Synthesis

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1 Introduction to Kinematics and Mechanisms

1.1 INTRODUCTION

Engineering is based on the fundamental sciences of *mathematics, physics,* and *chemistry.* In most cases, engineering involves the analysis of the conversion of energy from some source to one or more outputs, using one or more of the basic principles of these sciences. *Solid mechanics* is one of the branches of physics which, among others, contains three major subbranches: *kinematics,* which deals with the study of relative motion; *statics,* which is the study of forces and moments, apart from motion; and *kinetics,* which deals with the action of forces on bodies. The combination of kinematics and kinetics is referred to as *dynamics.* This text describes the appropriate mathematics, kinematics, and dynamics required to accomplish mechanism design.

A *mechanism* is a mechanical device that has the purpose of transferring motion and/or force from a source to an output. A *linkage* consists of links (or bars) (see Table 1.1), generally considered rigid, which are connected by joints (see Table 1.2), such as pins (or revolutes) or prismatic joints, to form open or closed chains (or loops). Such *kinematic chains,* with at least one link fixed, become (1) *mechanisms* if at least two other links retain mobility, or (2) *structures* if no mobility remains. In other words, a mechanism permits relative motion between its "rigid" links; a structure does not. Since linkages make simple mechanisms and can be designed to perform complex tasks, such as nonlinear motion and force transmission, they will receive much attention in this book. Some of the linkage design techniques presented here are the result of a resurgence in the theory of mechanisms based on the availability of the computer. Many of the design methods were discovered before